

CLAIMS

We claim:

1 [0400] 1.(currently amended) A nano-structure composition comprising a nano-particle core
2 and a nano-shell nano-structure formed an outer surface of the core, where the nano-particle core
3 comprises a first conductive material and the nano-shell structure comprises a second conductive
4 material, where the first and second conductive materials are the same or different.

[0401] 2.(canceled)

[0402] 3.(canceled)

[0403] 4.(canceled)

[0404] 5.(canceled)

[0405] 6.(canceled)

[0406] 7.(canceled)

[0407] 8.(canceled)

[0408] 9.(canceled)

[0409] 10.(canceled)

1 [0410] 11.(original) A nano-structure composition comprising a nano-particle core and a plurality
2 of nano-rods, where the nano-particle core comprises a first material and the nano-rods comprises
3 a first conductive material.

1 [0411] 12. The composition of claim 11, further A nano-structure composition comprising a
2 nano-particle core; a nano-shell interposed between the core and the nano-rods and a plurality of
3 nano-rods, where the nano-particle core comprises a first material; the nano-shell comprises a first
4 conductive material and the nano-rods comprise a second conductive material, where the first and
5 second conductive materials are the same or different.

[0412] 13.(canceled)

[0413] 14.(canceled)

[0414] 15.(canceled)

[0415] 16.(canceled)

[0416] 17.(canceled)

[0417] 18.(canceled)

[0418] 19.(canceled)

[0419] 20.(canceled)

[0420] 21.(canceled)

[0421] 22.(canceled)

[0422] 23.(canceled)

[0423] 24.(canceled)

[0424] 25.(canceled)

[0425] 26.(canceled)

[0426] 27.(canceled)

[0427] 28.(canceled)

[0428] 29.(canceled)

[0429] 30.(canceled)

1 [0430] 31.(new) The composition of claim 1, wherein the nano-structure is selected from the
2 group consisting of a nano-shell, a plurality of nano-rods and a nano-shell having a plurality of nano-
3 rods disposed on a surface of the nano-shell, where the nano-rods comprise a third conductive
4 material, where the first, second and third conductive materials are the same or different.

1 [0431] 32.(new) The composition of claim 1, wherein the first conductive material comprises
2 a first metal, metal alloy or a conductive polymer and the second conductive material comprises a
3 second metal or metal alloy.

1 [0432] 33.(new) The composition of claim 31, wherein the first conductive material comprises
2 a first metal, metal alloy or a conductive polymer, the second conductive material comprises a
3 second metal or metal alloy, and the third conductive material comprises third metal or metal alloy,
4 where the first, second and third metals and/or metal alloys are the same or different.

1 [0433] 34.(new) The composition of claim 32, wherein the first, second and third metals or
2 metal alloys are the same or different noble metals or metal alloys, where the noble metal are

3 selected from the group consisting of gold, silver, platinum, palladium, iridium, osmium, ruthenium,
4 rhodium, and mixtures or combinations thereof.

1 [0434] 35.(new) The composition of claim 33, wherein the first, second and third metals or
2 metal alloys are the same or different noble metals or metal alloys, where the noble metal are
3 selected from the group consisting of gold, silver, platinum, palladium, iridium, osmium, ruthenium,
4 rhodium, and mixtures or combinations thereof.

1 [0435] 36.(new) The composition of 1, wherein the first metal and first metal alloy are selected
2 respectively from the group consisting of non-transition metals, non-transition metal alloys,
3 transition metals, transition metal alloys, lanthanide metals, lanthanide metal alloys, actinide metals,
4 and actinide metal alloys.

1 [0436] 37.(new) The composition of 31, wherein the first metal and first metal alloy are
2 selected respectively from the group consisting of non-transition metals, non-transition metal alloys,
3 transition metals, transition metal alloys, lanthanide metals, lanthanide metal alloys, actinide metals,
4 and actinide metal alloys.

1 [0437] 38.(new) The composition of 1, wherein the nano-structure has a plasmon resonance
2 having a frequency range at least a portion of which lies in the near infrared region of the
3 electromagnetic spectrum.

1 [0438] 39.(new) The composition of 31, wherein the nano-structure has a plasmon resonance
2 having a frequency range at least a portion of which lies in the near infrared region of the
3 electromagnetic spectrum.

1 [0439] 40.(new) A nano-structure composition comprising a nano-particle core, a nano-
2 structure formed an outer surface of the core and a bio-compatible polymer coating the structure and
3 the core, where the nano-structure is selected from the group consisting of a nano-shell, a plurality
4 of nano-rods and a nano-shell having a plurality of nano-rods disposed on a surface of the nano-shell,
5 where the nano-particle core comprises a first material, the nano-shell comprises a second conductive

6 material, and the nano-rods comprise a third conductive material, where the second and third
7 conductive materials are the same or different.

1 [0440] 41.(new) The composition of claim 40, wherein the first material is a non-conductive
2 material, a semi-conductor material or a conductive material.

1 [0441] 42.(new) The composition of claim 41, wherein the first conductive material comprises
2 a first metal, metal alloy or a conductive polymer, the second conductive material comprises a
3 second metal or metal alloy, and the third conductive material comprises third metal or metal alloy,
4 where the first, second and third metals and/or metal alloys are the same or different.

1 [0442] 43.(new) The composition of claim 42, wherein the first, second and third metals or
2 metal alloys are the same or different noble metals or metal alloys, where the noble metal are
3 selected from the group consisting of gold, silver, platinum, palladium, iridium, osmium, ruthenium,
4 rhodium, and mixtures or combinations thereof.

1 [0443] 44.(new) The composition of 41, wherein the first metal and first metal alloy are
2 selected respectively from the group consisting of non-transition metals, non-transition metal alloys,
3 transition metals, transition metal alloys, lanthanide metals, lanthanide metal alloys, actinide metals,
4 and actinide metal alloys.

1 [0444] 45.(new) The composition of claim 40, wherein the nano-structure has a plasmon
2 resonance having a frequency range at least a portion of which lies in the near infrared region of the
3 electromagnetic spectrum.

1 [0445] 46.(new) A nano-structure drug-delivery composition comprising a nano-particle core,
2 a nano-structure, a bio-compatible polymer coating and a pharmaceutically active agent impregnated
3 into the polymer coating, where the nano-structure is selected from the group consisting of a nano-
4 shell, a plurality of nano-rods and a nano-shell having a plurality of nano-rods disposed on a surface
5 of the nano-shell, where the nano-particle core comprises a first material, the nano-shell comprises
6 a second conductive material, and the nano-rods comprise a third conductive material, where the

7 second and third conductive materials are the same or different.

[0446] 47.(new) A nano-structure drug-delivery composition comprising a nano-particle core, a nano-structure formed on an outer surface of the core, and a pharmaceutically active agent absorbed or attached thereto, where the nano-structure is selected from the group consisting of a nano-shell, a plurality of nano-rods and a nano-shell having a plurality of nano-rods disposed on a surface of the nano-shell, where the nano-particle core comprises a first material, the nano-shell comprises a second conductive material, and the nano-rods comprise a third conductive material, where the second and third conductive materials are the same or different.

[0447] 48.(new) A method for treating cancers or diseases comprising:
1 administering a composition to an animal including a human and
2 exposing the composition to an electromagnetic, magnetic, electrical and/or ultrasonic field
3 so that the nano-structures convert the field into thermal energy,
4 where the composition comprises a nano-particle core, a nano-structure formed an outer
5 surface of the core and a bio-compatible polymer coating the structure and the core or a
6 pharmaceutically active agent absorbed or attached thereto, where the nano-structure is selected from
7 the group consisting of a nano-shell, a plurality of nano-rods and a nano-shell having a plurality of
8 nano-rods disposed on a surface of the nano-shell, where the nano-particle core comprises a first
9 material, the nano-shell comprises a second conductive material, and the nano-rods comprise a third
10 conductive material, where the second and third conductive materials are the same or different.
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